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EXAMINER

PATEL, SHEFALI D

ART UNIT PAPER NUMBER

2621

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9

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/711,956

Applicant(s)

MIYAKE, NOBUTAKA

Examiner

Shefali D Patel

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 43 and 44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                        |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____   |

## DETAILED ACTION

### *Election/Restrictions*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. **Claims 1-42**, drawn to an image processing apparatus, which embeds predetermined information in an image, classified in class 382, subclass 100.
  - II. **Claims 43-44**, drawn to an image processing apparatus, which adds predetermined information to an image, classified in class 382, subclass 307.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the details of having generating power of a predetermined frequency component in unit of an image area according to predetermined information in **claims 43-44** are not recited in **claims 1, 21, and 41**, for example. The subcombination has separate utility such as an image processing apparatus/method, which adds predetermined information to an image rather than an image processing apparatus/method, which embeds predetermined information in an image.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Art Unit: 2621

4. During a telephone conversation with Mr. Mark Williamson (Reg. No. 33,628) on March 26, 2004 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-42. Affirmation of this election must be made by applicant in replying to this Office action. Claims 43-44 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Response to Amendment***

5. The amendment was received on January 23, 2004.
6. The amendment to the specification has been entered.
7. The objection made to claim 1 has been withdrawn.
8. 35 U.S.C. 112 2<sup>nd</sup> paragraph rejections to claims 1, 5, 8-9, 16, 21, 25, 28, 36, and 41 have overcome and have been withdrawn.
9. New claim objection to the claim 42 has been made. See below.

***Response to Arguments***

10. Applicant's arguments, see remarks (page 15-16), filed January 21, 2004, with respect to the rejection(s) of claim(s) 1, 21, and 41 under 35 U.S.C. 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of 35 U.S.C. 103(a) (Inoue, et al. in view of Hayashi, et al.).

Please note, the applicant argues on page 15 of the remarks that Inoue et al. is not concerned with an image that has been output as a print, and therefore it is not concerned with the problems of extracting information from a print. Applicant further argues that Inoue et al.

Art Unit: 2621

does not disclose the features of quantizing using the error diffusion method and controlling as recited in claim 1. Note that Inoue discloses quantizing is disclosed at quantization means that goes to the replacement portion 14 to change the condition (i.e., values) of the quantization values depending on the embedding information, col. 38 lines 34-43 and the error calculation portion 65 at col. 60 lines 37-45.

### *Claim Objections*

11. Claim 42 is objected to because of the following informalities: Claim 42 depends on claim 1. Claim 42 ought to be depended on claim 41 since claim 41 disclosed a computer readable memory medium. Note, claim 1 is an image processing apparatus. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-16, 18-36, and 38-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (USPN 6,477,276) (hereinafter, "Inoue") in view of Hayashi, et al. (USPN 6,535,616) (hereinafter, "Hayashi").

With regard to **claim 1** Inoue discloses an image processing apparatus which embeds predetermined information in an image (See, col. 38 lines 10-11), the apparatus comprising: input means for entering the image (signal 71 in Fig. 1 is the input means which inputs the image

Art Unit: 2621

in the system. Col. 38 lines 25-26); division means for dividing the entered image into plural image areas (division portion 12 dividing the image in plurality of blocks, col. 38 lines 30-34); quantization means for quantizing the image areas divided by said division means (quantization means 13, Fig. 1 and col. 38 lines 34-40), utilizing error diffusion method (quantization means goes to the replacement portion 14 to change the condition (i.e., values) of the quantization values depending on the embedding information, col. 38 lines 34-43. Later, Inoue discloses the error calculation portion 65 at col. 60 lines 37-45); and control means for controlling (control means include of element 14, 15 and 16 in Fig. 1), in a unit of the image area, the quantization condition by said quantization means according to the predetermined information (these three units control the quantization value on the basis of the information to be embedded in the block. See, col. 38 lines 40-56). Inoue does not expressly disclose outputting the image to a printer, which outputs the image as a print and for causing in a unit of the image area, to generate a pattern in which a dot arrangement is different according to the predetermined information. Hayashi discloses outputting the image to a printer, which outputs the image as a print (Hayashi: col. 11 lines 23-30) and for causing in a unit of the image area, to generate a pattern in which a dot arrangement is different according to the predetermined information (Hayashi: col. 10 lines 8-30). Inoue and Hayashi are combinable because they are from the same field of endeavor, i.e., embedding information in the image. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Hayashi with Inoue. The motivation for doing so is that by generating a pattern in which a dot arrangement is different according to the predetermined information will reduce the deterioration in the image quality as

suggested by Hayashi at col. 10 lines 13-16. Therefore, it would have been obvious to combine Hayashi with Inoue to obtain the invention as specified in claim 1.

With regard to **claim 2** Inoue discloses quantization condition that is a quantization threshold value (quantization threshold value is either  $q+1$  or  $q-1$  at col. 38 lines 37-43).

With regard to **claim 3** Inoue discloses quantization condition changes the quantization threshold value based on a predetermined period (the two values  $q+1$  and  $q-1$  is based on the predetermined period of the information being embedded, col. 38 lines 40-46).

With regard to **claim 4** Inoue discloses control means switches the predetermined period for changing the quantization threshold value in the unit of said image area (the predetermined period for changing the threshold value is in the unit of the image area because the values are used to obtain the mean values  $M'$  and these values are related to the image area, col. 38 lines 45-59).

With regard to **claim 5** Inoue discloses control means that switches the period in a horizontal direction and the period in a vertical direction for changing the quantization threshold value in the unit of the image area. (As clearly seen in Figure 21(b) that the period is in the horizontal and vertical direction for block HL3, col. 53 lines 65-67 to col. 54 lines 1-6).

With regard to **claim 6** Inoue discloses plural kinds of the predetermined periods (i.e., horizontal and vertical) and switches the predetermined period in the unit of the image area (as clearly seen in Figs. 21(a) and 21(b)).

With regard to **claim 7** Hayashi discloses predetermined information being audio information (see, col. 24 lines 35-47).

With regard to **claim 8** Inoue discloses predetermined information being related to a copyright of the image (See, col. 39 lines 11-14).

With regard to **claim 9** it is inherent that the information embedded in the image is done in such a manner not easily visible to a human eye.

With regard to **claim 10** Inoue discloses an image processing apparatus which extracts the predetermined information (See, col. 48 lines 45-47) from the image in which the predetermined information has been embedded (See, col. 46 lines 50-67), the apparatus comprising: input means for entering the image (signal 71 in Fig. 11 is the input means which inputs the image (here the image is being entered) in the system. Col. 45 lines 66-67); transformation means (transformation means 31, col. 48 lines 51-52.) for executing frequency transformation on the image areas divided by said division means (image that is divided by division as explained in claim 1 which was first divided into different frequency bands as described in Figs. 33-35); classification means (i.e., judgment portion 22, col. 48 line 53) for classifying the image areas into plural classes based on the transformation process of said transformation means (the judgment portion 22 classifies the image based on the quantization value which was obtained thru the process of transformation and quantization means, col. 43 lines 53-57); and extraction means for extracting the predetermined information, based on a feature amount of each class thus classified (extracting means 2b in Fig. 15, col. 48 lines 43-53).

With regard to **claim 11** Inoue discloses an orthogonal transformation 31 at col. 48 lines 51-52.

With regard to **claim 12** Inoue discloses comparison means (comparison means included in judgment portion, col. 61 lines 5-7) for comparing the feature amount of the classified classes



(amount of the classified classes are compared which is obtained after the error calculation portion 65 after the transformation, col. 60 lines 37-45); wherein said extraction means extracts said predetermined information based on the result of comparison by said comparison means (See, col. 61 lines 25-35).

With regard to **claim 13** Inoue discloses evaluation means for evaluating result of evaluation (as a prior art, Inoue discloses evaluating the image using three dividing filters, see col. 1 lines 60-67, also see Fig. 21(a) part LL1, LH1, HL1, and HH1.); and re-division means for executing again the division process of said division means, based on the result of evaluation by said evaluation means (re-division on each of the evaluation part into image signal 71 representing at col. 2 lines 4-19, Fig. 21(a) part LL1, LH2, HL2, HH2, etc.).

With regard to **claim 14** Inoue discloses re-division means executing division again by changing the dividing position of the division (position of the division changed from the entire block seen in Fig. 21 to within the block LL1).

With regard to **claim 15** Inoue discloses re-division means executing division again by changing the size of division (the size of the division is changing as seen in Fig. 21. Size of LH2 is different than size of LH3, etc.).

With regard to **claim 16** Inoue discloses feature amount being an absolute value of coefficients of transformation by said transformation means (See, col. 57 lines 59-61).

**Claim 18** recites identical features as claim 7 except claim 18 is apparatus for extracting claim. Thus, arguments similar to that presented above for claim 7 is equally applicable to claim 18.

**Claim 19** recites identical features as claim 8. Thus, arguments similar to that presented above for claim 8 is equally applicable to claim 19.

**Claim 20** recites identical features as claim 9. Thus, arguments similar to that presented above for claim 9 is equally applicable to claim 20.

**Claim 21** recites identical features as claim 1 except claim 21 is a method claim. Thus, arguments similar to that presented above for claim 1 is equally applicable to claim 21.

**Claim 22** recites identical features as claim 2 except claim 22 is a method claim. Thus, arguments similar to that presented above for claim 2 is equally applicable to claim 22.

**Claim 23** recites identical features as claim 3 except claim 23 is a method claim. Thus, arguments similar to that presented above for claim 3 is equally applicable to claim 23.

**Claim 24** recites identical features as claim 4 except claim 24 is a method claim. Thus, arguments similar to that presented above for claim 4 is equally applicable to claim 24.

**Claim 25** recites identical features as claim 5 except claim 25 is a method claim. Thus, arguments similar to that presented above for claim 5 is equally applicable to claim 25.

**Claim 26** recites identical features as claim 6 except claim 26 is a method claim. Thus, arguments similar to that presented above for claim 6 is equally applicable to claim 26.

**Claim 27** recites identical features as claim 7 except claim 27 is a method claim. Thus, arguments similar to that presented above for claim 7 is equally applicable to claim 27.

**Claim 28** recites identical features as claim 8 except claim 28 is a method claim. Thus, arguments similar to that presented above for claim 8 is equally applicable to claim 28.

**Claim 29** recites identical features as claim 9 except claim 29 is a method claim. Thus, arguments similar to that presented above for claim 9 is equally applicable to claim 29.

**Claim 30** recites identical features as claim 10 except claim 30 is a method claim. Thus, arguments similar to that presented above for claim 10 is equally applicable to claim 30.

**Claim 31** recites identical features as claim 11 except claim 31 is a method claim. Thus, arguments similar to that presented above for claim 11 is equally applicable to claim 31.

**Claim 32** recites identical features as claim 12 except claim 32 is a method claim. Thus, arguments similar to that presented above for claim 12 is equally applicable to claim 32.

**Claim 33** recites identical features as claim 13 except claim 33 is a method claim. Thus, arguments similar to that presented above for claim 13 is equally applicable to claim 33.

**Claim 34** recites identical features as claim 14 except claim 34 is a method claim. Thus, arguments similar to that presented above for claim 14 is equally applicable to claim 34.

**Claim 35** recites identical features as claim 15 except claim 35 is a method claim. Thus, arguments similar to that presented above for claim 15 is equally applicable to claim 35.

**Claim 36** recites identical features as claim 16 except claim 36 is a method claim. Thus, arguments similar to that presented above for claim 16 is equally applicable to claim 36.

**Claim 38** recites identical features as claim 18 except claim 38 is a method for extracting claim. Thus, arguments similar to that presented above for claim 18 is equally applicable to claim 38.

**Claim 39** recites identical features as claim 19 except claim 39 is a method claim. Thus, arguments similar to that presented above for claim 19 is equally applicable to claim 39.

**Claim 40** recites identical features as claim 20 except claim 40 is a method claim. Thus, arguments similar to that presented above for claim 20 is equally applicable to claim 40.

**Claim 41** recites identical features as claim 1 except claim 41 is a computer readable memory medium claim. Thus, arguments similar to that presented above for claim 1 is equally applicable to claim 41. Applicant's attention is invited to col. 63 lines 9-14 of Inoue for a computer readable memory medium.

**Claim 42** recites identical features as claim 10 except claim 42 is a computer readable memory medium claim. Thus, arguments similar to that presented above for claim 10 is equally applicable to claim 42. Applicant's attention is invited to col. 63 lines 9-14 of Inoue for a computer readable memory medium.

14. Claims 17 and 37 rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue in view of Hayashi as applied to claims 1-16 and 18-36 above, and further in view of Yuan, et al. (USPN 5,821,986) (hereinafter, "Yuan").

With regard to **claim 17** Inoue discloses a feature amount as described in claim 10. Inoue does not expressly disclose the feature amount being electric power. Yuan discloses the feature amount being electric power (see, col. 6 lines 54-59). Inoue and Yuan are combinable because they are from the same field of endeavor, i.e., encoding/decoding the image. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Yuan with Inoue. The motivation for doing so is that Yuan suggests at col. 6 lines 54-59 that for faster calculation with less time computation power, this feature allows for communication for decoding reasons. Therefore, it would have been obvious to combine Yuan with Inoue to obtain the invention as specified in claim 17.

**Claim 37** recites identical features as claim 17 except claim 37 is a method for extracting claim. Thus, arguments similar to that presented above for claim 17 is equally applicable to claim 37.

### ***Conclusion***

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shefali D Patel whose telephone number is 703-306-4182. The examiner can normally be reached on M-F 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H Boudreau can be reached on 703-305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2621

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**DANIEL MARIAM**  
**PRIMARY EXAMINER**

March 31, 2004

Shefali D Patel  
Examiner  
Art Unit 2621